**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27**

**B.Sc. BIOTECHNOLOGY– VI SEMESTER**

**Special Supplementary Examination, JUNE 2019**

**BT6215: Biostatistics and Plant Biotechnology**

Supplementary candidates only.

**Time- 21/2 hrs Max Marks-70**

**This paper contains two printed pages and three parts**

1. **Answer any TEN of the following 10 X 2 = 20 marks**
2. What is the mode of action of the *Bt* protein?
3. If one were to make a transgenic rice variety with better tolerance to bacterial blight, which transformation technique is ideal and why?
4. Write a brief note on plantibodies.
5. What is RAPD?
6. Using a diagram, describe how a transgenic construct would look like.
7. Write a note on the bar gene.
8. Depict the following using an appropriate diagram/ graph.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | 5 | 10 | 15 | 20 | 25 | 30 |
| F | 11 | 25 | 32 | 48 | 28 | 11 |

1. Differentiate between a statistic and a parameter.
2. What is the best measure of dispersion? Why?
3. What are the assumptions of Poisson distribution?
4. What is cluster sampling?
5. What is standard error?
6. **Answer any FIVE of the following 5 X 6 = 30 marks**
7. What are the main components of plant tissue culture media?
8. Using a diagram, describe the Ti plasmid. Add a note on ‘disarming’.
9. Write a note on molecular markers. Describe any two molecular markers.
10. What are the different approaches widely used to engineer stress tolerance in plants?
11. Calculate the median from the following data:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. of branches | 0-3 | 3-6 | 6-9 | 9-12 | 12-15 |
| No. of plants | 4 | 8 | 22 | 10 | 4 |

1. A person is known to hit the target in 4 out of 5 shots. Whereas another person is known to hit the target in 3 out of 4 shots. Find the probability that the target will be hit at all when they both try.
2. Data was collected on Soluble Nitrogen (x) and total chlorophyll (y) and the following quantities were obtained. Obtain the regression coefficient and test its significance.

∑dx2= 3.83, ∑dy2= 5.23, ∑dxdy=4.29

1. **Answer the following 2 X 10 = 20 marks**
2. What is Molecular Pharming? What are the main groups of recombinant proteins produced in plants by Molecular Pharming? Cite examples.

**OR**

Discuss any three direct plant transformation techniques. Add a note on the advantages and disadvantages of each.

1. Data on number of flowers is given below. Calculate Karl Pearson’s coefficient of Skewness.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. of flowers | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| No. of plants | 1 | 1 | 2 | 1 | 2 | 4 | 1 | 2 | 2 | 1 |

**OR**

Data recorded on pod length in two varieties of blackgram are given below. Does the pod length of variety 1 significantly differ from variety 2?

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety 1 | 5.0 | 4.9 | 5.2 | 5.4 | 6.0 | 6.1 | 5.8 | 5.7 | 6.4 | 6.3 |
| Variety 2 | 6.2 | 6.4 | 6.0 | 7.0 | 6.5 | 5.9 | 6.4 | 6.2 | 6..8 | 6.7 |

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